

AMENDMENTS TO THE CLAIMS

Listing Of Claims

Claims 1-57 (canceled)

58. (original) A semiconductor probe card comprising:

a probe card substrate;

an interconnect mounted to the probe card substrate having a first side and an opposing second side;

a first contact on the first side of the interconnect, the first contact comprising a conductive layer configured to electrically engage a second contact on a semiconductor wafer;

a conductive member comprising a laser machined opening in the interconnect extending from the conductive layer to the second side, the opening at least partially filled with a conductive material in contact with the conductive layer; and

a pad on the second side in electrical contact with the conductive member, the pad configured for electrical engagement with an electrical connector.

59. (original) The probe card of claim 58 wherein the first contact comprises a recess and the opening extends through the recess.

60. (original) The probe card of claim 58 wherein the first contact comprises a projection having a penetrating member for penetrating the second contact.

61. (original) The probe card of claim 58 wherein the first contact comprises a recess having a penetrating member form penetrating the second contact.

62. (original) The probe card of claim 58 wherein the opening includes a longitudinal axis and the pad has a centerline offset the axis.

63. (currently amended) A semiconductor package comprising:

a semiconductor die ~~having~~ comprising a face ~~with~~ and a bumped contact ~~thereon~~ on the face;

an interconnect ~~placed~~ on the face ~~and~~ having a first side and an opposing second side;

the interconnect comprising:

a contact on the first side ~~, the contact~~ comprising a ~~recess covered by~~ a conductive layer bonded to the bumped contact;

~~a laser machined opening through the interconnect to the second side,~~

a conductive member ~~formed in the~~ comprising an opening extending from the first side to the second side and a conductive material in the opening in contact with the conductive layer; and

~~a pad formed~~ an external contact on the second side in ~~contact~~ electrical communication with the conductive member.

64. (currently amended) The package of claim 63 further comprising an underfill layer ~~formed~~ between the first side of the interconnect and the face of the die.

65. (currently amended) The package of claim 63 wherein the conductive member comprises a metal or a conductive polymer ~~deposited~~ in the opening.

66. (currently amended) The package of claim 63 wherein the external contact comprises a ball.
~~further comprising a contact ball on the pad.~~

Claims 67-74 (canceled)

75. (original) A multi chip module comprising:
an interconnect having a first side and an opposing second side;

a plurality of first contacts on the first side of the interconnect, the plurality of first contacts comprising conductive layers;

a plurality of conductive members comprising laser machined openings in the interconnect extending from the conductive layers to the second side, the openings at least partially filled with a conductive material in contact with the conductive layers; and

a plurality of the semiconductor components mounted to the interconnect with a plurality of second contacts on the components electrically engaging the plurality of first contacts on the interconnects.

76. (original) The module of claim 75 wherein the first contacts comprise raised members with penetrating members and the second contacts comprise planar bond pads.

77. (original) The module of claim 75 wherein the first contacts comprise recesses at least partially covered by the conductive layers and configured to retain the first contacts.

78. (previously presented) An interconnect for a semiconductor component having an external contact comprising:

a substrate having a first side and an opposing second side;

a first contact on the first side configured to make an electrical connection with the external contact;

a second contact on the second side; and

a conductive member in electrical communication with the first contact and the second contact, the conductive member comprising a laser machined opening through the substrate, and a conductive material in the opening in contact with the conductive layer.

79. (previously presented) The interconnect of claim 78 wherein the conductive member, the first contact and the second contact have coincident center lines.

80. (previously presented) The interconnect of claim 78 wherein the conductive member, and the first contact have coincident center lines.

81. (previously presented) The interconnect of claim 78 wherein the second contact comprises a pad.

82. (previously presented) The interconnect of claim 78 wherein the second contact comprises a contact ball.

83. (previously presented) An interconnect for a semiconductor component having an external contact comprising:

a substrate having a first side and an opposing second side;

a first contact on the first side configured to electrically engage the external contact;

a second contact on the second side;

a laser machined opening through the first contact, the substrate and the second contact; and

a conductive material in the opening in contact with the first contact and the second contact.

84. (previously presented) The interconnect of claim 83 wherein the conductive material comprises a metal at least partially filling the opening.

85. (previously presented) The interconnect of claim 83 wherein the conductive material comprises a metal layer on a surface of the opening.

86. (previously presented) The interconnect of claim 83 wherein the conductive member, and the first contact have coincident center lines.

87. (previously presented) The interconnect of claim 83 wherein the conductive member, the first contact and the second contact have coincident center lines.

88. (previously presented) The interconnect of claim 83 wherein the second contact comprises a pad.

89. (previously presented) The interconnect of claim 83 wherein the second contact comprises a contact ball.

90. (new) A semiconductor package comprising:
a semiconductor die comprising a plurality of first contacts;

an interconnect attached to the die comprising:

a substrate having a first side and an opposing second side;

a plurality of second contacts on the first side bonded to the first contacts on the die;

a plurality of conductive members in the substrate in electrical communication with the second contacts comprising openings extending from the first side to the second side and a conductive material in the openings; and

a plurality of third contacts on the second side in electrical communication with the conductive members.

91. (new) The package of claim 90 wherein the substrate comprises a semiconductor material.

92. (new) The package of claim 90 wherein the substrate comprises a ceramic material or a glass filled resin material.

93. (new) The package of claim 90 wherein the first contacts comprise bumps and the second contacts comprise recesses and conductive layers on the recesses bonded to the bumps.

94. (new) The package of claim 90 wherein the third contacts comprise balls.

95. (new) The package of claim 90 further comprising an underfill layer between the die and the interconnect.

96. (new) A semiconductor package comprising:
an interconnect comprising a substrate having a first side and an opposing second side, a plurality of contacts on the first side, a plurality of conductive members comprising openings in the substrate extending from the first side to the second side and a conductive material in the openings, and a plurality of external contacts on the second side in electrical communication with the conductive members; and

a semiconductor die having a face attached to the first side in electrical communication with the contacts.

97. (new) The package of claim 96 further comprising an underfill layer between the face and the first side.

98. (new) The package of claim 96 wherein the contacts comprise bumps.

99. (new) The package of claim 96 wherein the external contacts comprise balls.

100. (new) The package of claim 96 wherein the substrate comprises a semiconductor material.

101. (new) The package of claim 96 wherein the substrate comprises a ceramic material.

102. (new) The package of claim 96 wherein the substrate comprises a glass filled resin.